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NAMRU-3 Vector Biology Teams Up with Nigerian Federal Ministry of Health Center Colleagues

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Obisi Ngozi, Medical Lab Technologist, NAVRC, sets UV Traps for night biting mosquitoes under the lights from mobile phones at one of several different sites during the five-day course.

ABUJA, Nigeria – Four U.S. Naval Medical Research Unit No. Three (NAMRU-3) vector biologists and other staff members traveled to Abuja and Enugu State, Nigeria, in February to expand on collaborative research efforts in the region, as well as to survey for arboviruses transmission. They were joined by researchers at the National Arbovirus and Vectors Research Center (NAVRC), as well as soldiers from the 82 Division, Nigerian Army, who will be included in an arbovirus risk mapping project.

The 17 NAVRC researchers were divided into two groups; molecular biology and entomology. The molecular group, taught by Nermeen Fahmy, Medical Research Technologist, NAMRU-3, focused on viral ribonucleic acid (RNA) and deoxyribonucleic acid (DNA) extraction, polymerase chain reaction (PCR), gel preparation, loading samples, running electrophoresis, data analysis, detection for dengue and chikungunya viruses serotypes in *Aedes* mosquitoes, as well as molecular detection of *Plasmodium falciparum* in *Anopheles gambiae* mosquitoes.

“Five days is a short amount of time for learning so many new things. I asked them to repeat the tasks over and over again to make sure they understood. They were eager to learn and

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that made the difference,” said Fahmy

Fahmy quizzed the participants to make sure everyone in the course was capable of performing the laboratory procedures on their own before the end of the training.

Josephine Ochu, Principal Scientific Officer, NAVRC, has worked at the center for eight years and remembers when the idea for a molecular section came about.

“We didn’t have these capabilities before, we had some equipment but we didn’t know how to use it and now after this training we are all so happy to be able to do the things we’ve only talked about,” said Ochu.

The entomology group studied adult mosquito trapping, handling, sorting, identification and preservation, as well as larval collection and identification. The NAMRU-3 and NAVRC teams traveled to different sites and used different methods of mosquito collection such as CDC UV Light traps, Biogents- Sentinel traps, and spray catch. They also collected larvae in order to test for insecticide resistance.

“Mosquitoes bite at different times of day and the types of mosquito varies depending on the location. Successful risk mapping involves setting traps in as many different locations as possible as well as during different times [of day],” said Reham Tag Eidin, Medical Research Technologist, NAMRU-3.

The NAMRU-3 team shared lab and field equipment needed for the mosquito collection and trapping.

“I have only seen the Biogents trap in a book, and this week I set the trap myself. So many people here are affected by these diseases. I like being able to do my part to better understand the mosquitoes that transmit the viruses,” said participant Kingsly Ezihe, Scientific Officer I, Entomology, NAVRC.

Mosquito-borne diseases are common in Nigeria, and the majority of NAVRC researchers had more than one family member affected. Dr. Okechukwu Chukwuekezie, Chief Medical Officer, NAVRC has worked at the center for ten years, and has watched the research and the infrastructure improve over the years.

“The work we do here is important and the staff here is motivated about what we do. The training this week has been a dream come true because now we are able to do more than we were before in the field of malaria vectors,” said Chukwuekezie.

This project in Enugu State also provided the opportunity for NAMRU-3 researchers to work closely with the Nigerian Army.

“Engaging in a military to military collaboration with the Nigerian military allows both sides to enhance knowledge about how to survey for and better [protect] our forces from vector borne diseases,” said Lt. Hanayo Arimoto, Head of Vector Biology Research Program (VBRP), NAMRU-3.

The NAMRU-3 vector team met with several representatives from the Presidential Malaria Initiative-USAID Nigeria, National Malaria Elimination Program, and the Director of Public

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Health.

This is the second project for NAMRU-3 in Nigeria. Dr. Hala Bassaly, Medical Research Scientist, NAMRU-3, led the first VBRP team in 2016 to Calabar, Cross River State, Nigeria and due to the success there, the project in Enugu was born.

“I hope we can continue to expand these projects all over Nigeria, as well as other parts of Western Africa. These projects require a great deal of collaboration and logistical planning which can be a little challenging at times but teaching more skills on vectors makes it all worth it,” said Bassaly.

The project in Nigeria would not have been possible without the collaborative and logistical support of Robbie Nelson, Country Director, Walter Reed Program Nigeria (WRP-N), and Ms. Treasure Okoye, Associate Director, Malaria Program, WRP-N who accompanied the team throughout the 11-day trip.

NAMRU-3 researchers plan to return to Enugu later this year and similar projects have also begun in Liberia. The NAMRU-3 Ghana Detachment recently hosted a Malaria Task Force meeting in Accra, Ghana.

NAMRU-3’s primary mission is to study, monitor and detect emerging and re-emerging infectious disease threats of military and public health importance; develop mitigation strategies against these threats in partnership with host nations, international and U.S. agencies in the CENTCOM, EUCOM, and AFRICOM areas of responsibility.

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